

REMARKS

Introduction

In response to the Office Action dated October 25, 2007, Applicants have amended claims 11, 12, 13, and 16. Care has been taken to avoid the introduction of new matter. Claim 25 has been cancelled. Claim 24 is withdrawn. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that all pending claims are in condition for allowance.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. Applicants respectfully submit that the objection is moot in view of amendment claim 16 deleting “a holding condition.”

Withdrawal of the foregoing objection is respectfully requested.

Claim Rejections Under 35 U.S.C. § 112

Claims 16-21 stand rejected under 35 U.S.C. § 112, first paragraph, as purportedly failing to comply with the written description requirement.

Applicants respectfully submit that the rejection is moot in view of the amendment of claim 16 deleting “a holding condition.”

Claims 12, 13, 16-21, and 25 stand rejected under 35 U.S.C. § 112, second paragraph, as purportedly being indefinite for failing to particularly point out and distinctly claim the subject matter, which the Applicants regards as the invention.

Applicants respectfully submit that the rejection of claims 16-21 is moot in view of the amendment of claim 16 deleting “a holding condition.”

The Office Action asserts that there is no antecedent basis for “the measured values” in claims 12 and 13.

The antecedent basis issue identified by the Examiner have been addressed in the foregoing amendment to claims 12 and 13.

Applicants respectfully submit that the rejection of claim 25 is moot in view of the foregoing amendment cancelling claim 25.

Withdrawal of the foregoing rejections is respectfully requested.

Claim Rejection Under 35 U.S.C. § 103

Claims 11, 14, and 25 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over Fajardo (WO 00/16141) alone or in view of U.S. Patent No. 5,167,684 to Turpin. Amended claim 11 recites, in part, “...drawing the optical fiber from the preform with a fiber drawing furnace, wherein the drawing step includes obtaining an area fraction of the plurality of voids in the drawn optical fiber, and **performing feedback control of pressure in the plurality of voids, a furnace temperature and time for fiber to pass the fiber drawing furnace**, based on the obtained area fraction.”

The Office Action asserts that Fajardo discloses changing the pore volume and air fill fraction as a design variable. The Office Action admits that Fajardo does not explicitly disclose “obtaining an area fraction of the plurality of voids,” or the claimed performing of feedback control. The Office Action asserts that Fajardo discloses controlling pressure during the drawing. The Examiner concludes that since Fajardo teaches controlling pore volume and an air

filling fraction, it would have been obvious to measure, calculate, estimate, and otherwise “obtain” these values, so that one can control them.

According to the claimed subject matter per amended claim 11, the drawing step includes performing feedback control of pressure in a plurality of voids and a furnace temperature and time for the fiber to pass the fiber drawing furnace. Thereby, as taught in the instant specification, the optical fiber has the desired distribution of the area fraction of the voids along a fiber axis with a high accuracy (*see, e.g.*, Paragraphs [0036], [0090], [0092], and [0095] and Fig. 10). However, Fajardo does not disclose or suggest this, and apparently is unaware of the unexpected improvement in suppressing a fluctuation in the structure of the preform along its axis and a temporal fluctuation in the fiber drawing environment provided by the claimed method. Fajardo fails to disclose or suggest, at a minimum, “...obtaining an area fraction of the plurality of voids in the drawn optical fiber, and performing feedback control of pressure in the plurality of voids,” as recited in amended claim 11.

The Office Action states on line 8 of page 6 bridging to line 4 of page 7:

However, even if they are completely different fractions, the present claims fail to define over Fajardo-merely because the broadest reasonable interpretation of “area fraction” appears to encompass *any conceivable fraction*. This may seem a bizarre finding, since Applicant has clearly and deliberately defined “area fraction” at page 16, lines 8-11 as ‘the ration of the total area of the voids to the area of the cross section’ which occurs ‘in the cross-section of a preform or a fiber.’ It may seem bizarre that the Office finds that the term is much broader than Applicant’s definition-because Applicant has the right to be his own lexicographer. [The] Examiner finds that Applicant intends a broader scope because page 41 at line 11 gives another definition in the form of an equation-it is not the ratio of the two areas; it is not the ratio of the two areas as defined on page 16. [The] Examiner understands that the page 41 equation yields a useful estimation, but it is clear that this is not a determination of the (*sic*) an actual area fraction at a specific location. Since approximations read on the claim, it is deemed that any value/fraction can be an approximation-no matter how well [or] poorly it approximates it. Fajardo’s ‘air filling fraction’ is a fraction. One could say it reads on Applicant’s “area

fraction,” because it is merely an estimate thereof. It does not matter how well or horribly it estimates it. It could even have an error of 5000% and [a] horrible correlation. Since Applicant uses an estimation of the fraction, one could use Fajardo’s fraction as an estimation (*emphasis added*).

This rejection is clearly erroneous. This rejection is based on an incorrect reading and interpretation of the specification.

It is well known by persons skilled in the art that a preform is a piece of glass used to draw an optical fiber. In one embodiment of the present application, Fig. 1 shows an optical fiber 10. Fig. 7 is a cross-sectional view of a preform 50 used in a fabrication method of a optical fiber according to an embodiment of the present invention. An optical fiber is considerably different from the preform in structure and function. As disclosed in the present specification, an “area fraction of voids” is described on page 16, lines 8-11. The equation on page 41 at line 11 is an equation for obtaining “area fraction of voids in a cross-section of a fiber.” The area fraction of voids in a cross-section of a preform and the area fraction of voids in a cross-section of a fiber is discussed in line 10 of page 16. Accordingly, the difference between the two discrete measurements would not suggest that the measurement of the “area fraction of voids” is the same for a fiber or a preform.

Further, the disclosure as originally filed does not, however, have to provide in haec verba support for the claimed subject matter at issue. See Fujikawa v. Wattanasin, 93 F.3d 1559, 1570 (Fed. Cir. 1996). Instead, the disclosure need only reasonably convey to persons skilled in the art that the inventor had possession of the subject matter in question[.]”); *In re Smith*, 481 F.2d 910, 914 (C.C.P.A. 1973) (claimed subject matter need not be described *in haec verba* in the specification in order for that specification to satisfy the description requirement). The disclosure must only describe the claim limitations so clearly that persons of ordinary skill in the

art will recognize from the disclosure that the inventor's invention included the claimed elements. *See, e.g., Vas-Cath, Inc. v. Marhurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991) ("The purpose of the 'written description' requirement is broader than to merely explain how to 'make and use'; the applicant must also convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention.").¹

The Office Action asserts that Turpin shows it is known to control pressure during fiber drawing. Turpin fails to disclose or suggest, at a minimum, "...obtaining an area fraction of the plurality of voids in the drawn optical fiber, and performing feedback control of pressure in the plurality of voids," as recited in amended claim 11. Thus, Turpin does not cure the deficiencies of Fajardo.

The Office Action states with respect to dependent claim 14 that the Applicant does not dispute that the interpretations of "single piece" and "boring" were unreasonable.

The Examiner's reliance on "broadest reasonable interpretation" is unreasonable and in conflict with the well-known established meanings of the respective terms. The boring methods shown in Figs. 11 and 12 do not include using a rotating bit/drill that is described in Fajardo. According to the claimed subject matter per dependent claim 14, the voids are made in a base material having an axis in a single piece.

In contrast, Fajardo discusses a stacking method, that is, a method of stacking a plurality of fine rods or pipes to make a preform, not a single piece. Fajardo is *silent* regarding a single rod made of a base material. Therefore, "preparing a base material having an axis in a single

¹ *In re Wertheim*, 541 F.2d 257, 262 (C.C.P.A. 1976) (the application must describe the claim limitations "only so clearly that persons of ordinary skill in the art will recognize from the disclosure that appellants invented processes including those limitations"); *but see Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 969 (Fed. Cir. 2002) (holding that mere "possession" is not always sufficient when dealing with cases where claim of priority is *not* made to an earlier patent – that the written description requirement is satisfied by the patentee's disclosure of such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention).

piece" is not equivalent to the Examiner's interpretation of --preparing a base material having an axis into a single piece--. Fajardo fails to disclose or suggest, "...preparing a base material having an axis in a single piece; boring three or more voids of the plurality of voids in the base material along the base material axis," as recited in dependent claim 14.

Page 7 of the instant Office Action refers to the previous Office Action mailed May 8, 2007 for the broadest reasonable interpretation for "single piece" and "boring." The instant Office Action avers that the Applicant does not dispute that the interpretations found in the Office Action mailed May 8, 2007 were unreasonable.

The Applicants traverse.

The Office Action mailed May 8, 2007 states on page 8, "it is deemed that if a medium can be a vacuum, then a 'piece' can also be a vacuum or nothingness or a gas."

As a preliminary matter, the Office Action mailed May 8, 2007 rejected claims 11-14 and 16-20 under 35 U.S.C. § 102 (e) as being anticipated by Fajardo (U.S. Patent No. 6,444,133). In contrast, in the instant Office Action, claims 11, 14, and 25 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over Fajardo (WO 00/16141) alone or in view of U.S. Patent No. 5,167,684 to Turpin. What is the nature of the rejection -- 35 U.S.C. §102 or 35 U.S.C. §103? The necessity for the Examiner to boot strap in different references and theories of routine skill and determination and common knowledge and common sense, in the Examiner's own words, undermines the factual determination of lack of novelty under 35 U.S.C. §102 as well as any inherency theory.

It is well known by persons skilled in the art that a "single piece" includes material or matter, not a vacuum, 'nothingness,' or a gas. Accordingly, the rejection of claims 11, 14, and 25 predicated on Fajardo and Turpin should be withdrawn.

Further, the Office Action is setting forth a motivational rationale not supported by the record, but rather based solely on the Examiner's belief of what one skilled in the art may have tried or recognized.

However, to set forth a rejection including Official Notice, the rejection must include some form of evidence in the record to support an assertion of common knowledge. If Official Notice is taken of a fact, unsupported by documentary evidence, then the basis for such reasoning must be set forth explicitly. The Examiner must provide specific factual findings predicated on sound technical and scientific reasoning to support his or her conclusion of common knowledge. *See*, MPEP 2144.03(B).

It is well settled that "the Board [and the Examiner] cannot simply reach conclusions based on [their] own understanding or experience - or on [their] assessment of what would be basic knowledge or common sense. Rather the Board [and the Examiner] must point to some concrete evidence in the record in support of these findings." *In re Zurko*, 258 F. 3d 1379, 1386 (Fed. Cir. 2001). *See also, In re Lee*, 277 F. 3d 1338, 1344-45 (Fed. Cir. 2002), in which the court required evidence for the determination of unpatentability by clarifying that the principles of "*common knowledge*" and "*common sense*" may only be applied to the analysis of evidence, rather than be a substitute for evidence.

Contrary to these requirements, the outstanding Office Action provides no sound technical and scientific reasoning to support the above recited Official Notice. The relied upon motion must be evidenced in the record, and cannot be based merely on an opinion of the Examiner.

Claim 12 stands rejected under 35 U.S.C. § 103 (a) Farjardo alone or in view of Turpin, and further in view of U.S. Patent No. 6,098,428 to Bogdahn and U.S. Patent No. 4,793,840 to Harding. The Office Action admits that Fajardo does not disclose the claimed calculating step of

the area fraction. The Office Action relies on Bogdahn in an attempt to cure the deficiencies of Fajardo. The Office Action asserts that Bogdahn teaches a method of drawing hollow fibers with very high dimensional accuracy. The Office Action states that Bogdahn teaches calculating the controlled variable. The Office Action avers that it would have been obvious to use the Bogdahn method for controlling any of the Fajardo controlled variables, such as the air fill fraction. The Office Action admits that Bogdahn and Fajardo do not measure preform speed. The Office Action relies on Harding in an attempt to cure Bogdahn and Fajardo.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Fajardo to modify the method of making an optical fiber, nor does common sense dictate the Examiner-asserted modifications. The Examiner has not provided any evidence that there would be any obvious benefit in making the asserted modification of Fajardo. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

The only teaching of the sub steps of measuring a speed at which the preform is supplied and calculating the area fraction of the plurality of voids is found in Applicants' disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

None of the cited references, individually or combined, disclose or suggest, “...measuring a speed at which the preform is supplied, a speed at which the optical fiber is drawn, and a diameter of the optical fiber during drawing; and calculating the area fraction of the plurality of voids in said drawn optical fiber from values measured in the measuring step, the preform diameter, and the area fraction of the plurality of voids in the preform, where the preform diameter and the area fraction of the plurality of the voids in the preform are measured before the optical fiber drawing,” as recited in amended, dependent claim 12.

Claim 13 stands rejected under 35 U.S.C. § 103 (a) Farjardo alone or in view of Turpin, and further in view of U.S. Patent No. 6,098,428 to Bogdahn and U.S. Patent No. 5,961,681 to Tateishi.

Dependent claim 13 is allowable for at least for the same reasons as independent claim 11, and further distinguishes the claimed method of making an optical fiber.

Claim 14 stands rejected under 35 U.S.C. § 103 (a) Farjardo alone or in view of Turpin, and further in view of “Toward practical holey fiber technology: fabrication, splicing, modeling, and characterization” (Bennett) and U.S. Patent No. 6,411,762 to Anthon.

Dependent claim 14 is allowable for at least for the same reasons as independent claim 11, and further distinguishes the claimed method of making an optical fiber.

Claim 15 stands rejected under 35 U.S.C. § 103 (a) Farjardo alone or in view of Turpin, Bennett and Anthon, and further in view of U.S. Patent No. 6,474,108 to Onishi.

Dependent claim 15 is allowable for at least for the same reasons as independent claim 11, and further distinguishes the claimed method of making an optical fiber.

Conclusion

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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